AMERICAN MUSEUM NOVITATES

Number 909 Published by THE AMERICAN MUSEUM OF NATURAL HISTORY New York City February 25, 1937

BEES OF THE GENUS SPHECODES FROM SASKATCHEWAN

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On August 30, 1936, I went out to hunt bees at Waskesiu, in Prince Albert National Park, Saskatchewan. The locality is in the Canadian Zone. It was late in the season for a place so far north, and it seemed at first that I should not get anything. The many fine asters by the roadsides had no bees upon them. I had almost concluded that there was nothing to be had, except an occasional stray *Bombus*, when I chanced on some small patches of golden rod near the shore of the lake. These were freely visited by small bees, mostly *Sphecodes*, but with also a male *Halictus* (*Chloralictus*) *oblongus* Lovell and a female *Andrena canadensis* Dalla Torre. A male *Halictus lerouxii* Lepeletier was taken nearby, but not on a flower. The *Sphecodes*, on examination, proved to consist of four species, apparently all new. Professor E. H. Strickland has sent me 29 specimens of *Sphecodes* from the adjacent province of Alberta. Two species are represented by males, both different from any of the Waskesiu species. There are at least ten species represented by females. Graenicher records thirteen species from Wisconsin, all different from the Waskesiu ones. In southern Maine, Lovell found about eight species. A *Sphecodes nubilus* Lovell and Cockerell has been cited, without description, by Lovell, Johnson and Meyer; I do not know the source of the name, possibly it is the species described as *S. nephelotus* Lovell and Cockerell.

Southward, from Illinois to Colorado and New Mexico, the Sphecodine fauna is much more varied, with genera or subgenera segregated by Robertson: *Drepanium*, *Dialonia* and *Machaeris*, having simple mandibles in the female; *Proteraner*, with males appearing in the spring; *Sphecodium*, small species in which the fourth antennal joint of male is hardly longer than the third. Singularly enough, there is a genus *Eupetersia* Blüthgen (1928) in Africa, with fourteen species, which is doubtfully distinct from *Machaeris* (see Ann. Mag. Nat. Hist., July, 1932, p. 118). In Central Europe, the *Sphecodes* fauna is rich, with 22 species. Timberlake has found many species, which still await description, in Southern California.

Most species of *Sphecodes* are parasitic in nests of *Halictus*, but some

(as *S. pellucidus* Smith) live with *Andrena.* According to the European records, they do not confine themselves to a single species of the host genus. We know hardly anything about the biology of American *Sphecodes.*

Sphecodes solidaginis, new species

MALE.—Length about 7.3 mm., anterior wing about 5; head and thorax black, with white hair, dull and thin on thorax, but dense and pure white at sides of face, the clypeus hairy in middle, but a large triangular patch on each side bare enough to show the surface, which is dull, very densely and strongly punctured; antennae black (flagellum very faintly brownish beneath toward end), third joint about 170μ long, fourth 290; flagellum moniliform, the joints with small facets; mandibles bright red except at base; mesothorax densely and coarsely punctured, shining between the punctures; scutellum densely and coarsely punctured; area of metathorax large, semicircular, with very coarse plicae, which at base are replaced by a rugose surface, and near apex are crossed by a ridge; tegulae brown with a broad hyaline margin; wings clear hyaline, stigma and nervures pale yellowish brown; second cubital cell broad, but not as broad as high, receiving recurrent nervure near end; seven hooks on hind wing; legs black, with the anterior tibiae red in front, and the tarsi dusky reddish or brownish, not conspicuously pale; spurs yellowish white; abdomen highly polished, first two tergites entirely orange-ferruginous, first with very sparse punctures, second with numerous punctures on basal part, but apical depression impunctate; third tergite red, with a suffused black saddle, not nearly reaching sides, and the broad apical margin pale golden; fourth and fifth black, sixth dusky red; first two sternites red, the others black; genitalia entirely clear bright ferruginous; apical joint of stipites claw-like, basal part stout; sagittae short, dark at end.

Variety *b.*—Mandibles with less red, the basal half black; third antennal joint about 200μ, fourth about 270; anterior tibiae entirely black; first tergite broadly suffused with black, leaving a large triangular red area at each apical corner; second tergite with a black saddle; third black; first sternite red, the others black.

Waskesiu, Saskatchewan, at flowers of *Solidago,* Aug. 30, 1936 (Cockerell). This may be compared with the next species, but I do not know any other with entirely bright red genitalia.

Sphecodes borealis, new species

MALE.—Length about 7.5 mm., anterior wing 5.5 mm.; head and thorax black, with white hair, dull and sparse on thorax, dense and pure white on face, covering surface; mandibles bright red, with the base black; antennae black, third joint about 200μ long, fourth about 320; flagellum moniliform, facets beginning on eighth antennal joint, and reaching base of joint; mesothorax and scutellum densely punctured, shining between the punctures; area of metathorax poorly defined, with very coarse irregular rugae, at sides forming an open reticulation; tegulae dark brown, with pallid margin; wings clear hyaline; stigma dark reddish brown, nervures pale brown; second cubital cell moderately broad, the lower side very oblique; seven hooks on hind wing; legs black, with the front knees, the anterior tibiae in front,

the other tibiae at end, and the tarsi, red; abdomen highly polished, first two tergites entirely bright chestnut red; sculpture of first two tergites about as in *S. solidaginis;* third tergite black in middle and red at sides; the remaining tergites black; first three sternites red, but first and third with a black spot in middle; genitalia formed much as in *S. solidaginis*, but black, with the falciform apical part of stipites red, the basal part of stipites extremely stout.

Waskesiu, Saskatchewan, at flowers of *Solidago*, Aug. 30, 1936 (Cockerell). *S. patruelis* Cockerell, from Washington State, has the extremely stout basal part of stipites black, but the short subglobose apical part, and the sagittae, bright red. It is considerably smaller than *S. borealis*, and has the tarsi yellowish white, and the tibiae light reddish at apex.

Sphecodes pusillus, new species

MALE.—Length about 6 mm., anterior wing 4 mm.; head and thorax black, with very little hair, but the broad face covered with white hair, not so dense as to hide the well-punctured surface of clypeus, the hairs on clypeus conspicuously plumose; mandibles black, with the tip bright red; antennae black, the stout flagellum long; third joint about 120μ long, fourth about 255; large subquadrate granular minutely pubescent areas, appearing pallid, on last six antennal joints, these areas including the base but not reaching apex; mesothorax and scutellum polished, the punctures not very dense; area of metathorax semicircular, distinct, very coarsely reticulate; tegulae light brown; wings grayish hyaline, stigma and nervures brown; second cubital cell very narrow; legs black, with the tarsi dull whitish, the short thick front tibiae shining and obscure reddish on inner side; hind tibiae black to the end; abdomen polished, rather broad and short for a male; punctures on first tergite sparse but fairly abundant, on second about as in the species described above; first two tergites red, the first with a black area in middle, and a pair (more basad) at sides, second with an inconspicuous blackish spot in middle; remaining tergites black, except that the third has the basal corners red; first two sternites red. The type has six hooks on hind wing on one side, seven on the other.

Waskesiu, Saskatchewan, at flowers of *Solidago*, Aug. 30, 1936 (Cockerell). This may be compared with *S. nephelotus* Lovell and Cockerell, from Maine, which differs by having the abdomen black, with two or three red bands, and the clear, milky wings.

Sphecodes politulus, new species

MALE.—Length about 6.5 mm., anterior wing 4.5 mm.; head and thorax black, with scanty white hair, the face densely covered with white hair; mandibles bright red except at base; antennae black, the flagellum not moniliform, obscurely brown beneath; mesothorax and scutellum highly polished and sparsely punctured; area of metathorax rather short, very coarsely reticulate; posterior truncation very coarsely rugose; tegulae very dark; wings brownish hyaline, stigma and nervures brown; second cubital cell moderately broad, third broader on marginal than second; five hooks on hind wing; legs black, with the tarsi, front tibiae except a blackened

area on outer side, and narrow apex of middle and hind tibiae, red; abdomen highly polished, the first tergite black, with the hind margin broadly red; second all red; third red with a nebulous transverse black shade, the rest black; first three sternites red. The antennae have the third joint about 135μ long, the fourth about 255; a noteworthy feature is a large strongly punctured area, apically rounded, on fourth segment, its base resting on the base of the segment. The first tergite is impunctate, and the second has only widely scattered excessively minute punctures; thus the species differs from those described above.

Waskesiu, Saskatchewan, at flowers of *Solidago*, Aug. 30 (Cockerell).

In many ways this closely resembles *S. millsi* Cockerell, from the mountains of Colorado, but it is a little smaller, has dusky wings, and no black on second tergite.

The only other *Sphecodes* I took in Saskatchewan was a male *S. lautipennis* Cockerell, at flowers of *Solidago*, Saskatoon, Sept. 6. This is a species of the prairie region, not likely to occur at Waskesiu.

The following key will separate the above males. I include also a Wisconsin species (*S. solonis*), because the Wisconsin fauna extends in large measure to western Canada, as shown especially in the genus *Andrena*.

1.—Length nearly 6 mm.; abdomen black, except testaceous bands on first three tergites..... *solonis* Graenicher.
Abdomen with some of the tergites red.....2.
2.—Over 7 mm. long; fourth antennal joint not twice as long as third; antennae entirely black; wings perfectly clear.....3.
Less than 7 mm. long; fourth antennal joint about twice as long as third; wings more or less brownish or dusky.....6.
3.—First tergite mainly or partly black.....4.
First tergite entirely clear red.....5.
4.—Larger; tergites 2 and 3 entirely clear red; wings milky.. *lautipennis* Cockerell.
Smaller; second tergite with a black saddle... *solidaginis*, new species, variety *b*.
5.—Genitalia entirely clear red..... *solidaginis*, new species.
Genitalia mainly black..... *borealis*, new species.
6.—First tergite mainly red; antennae black; tarsi whitish.... *pusillus*, new species.
First tergite mainly black, broadly red at sides posteriorly; tarsi clear red. *politulus*, new species.

S. hudsoni Cockerell was based on the female, about 7 mm. long, from Hudson Bay. It does not seem likely to belong with any of the above males, and I do not find it among the females from Alberta. The abdomen is entirely clear yellowish ferruginous, and the legs are dark rufofuscous.

The types of the new species have been placed in the American Museum.